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ABSTRACT

Writing research has long sought to identify the internal features of written discourse that help to explain qualitative differences among student texts. Reflecting the theories of the Prague School linguists, this study used a topical structure analysis to distinguish between the sentences and T-units of 48 college freshman essays evaluated as either low or high quality. Comparing length, syntax, and topical structure, the study found that while both low and high quality texts most often used T-units in which the initial elements and topical and grammatical subjects coincided, 35.6% of the T-units in low quality texts, compared to only 18.7% of those in high quality essays, had topical subjects appearing after the grammatical subject. Also, research revealed that the poorer essays introduced significantly more topics per T-unit. These findings suggest that the writers of the high quality essays were more capable of both discovering content for the topics they introduced and distinguishing between crucial and noncrucial topics. (MM)

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TOPICAL STRUCTURE AND WRITING QUALITY:

A STUDY OF THE ARGUMENTATIVE TEXTS OF COLLEGE WRITERS

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TOPICAL STRUCTURE AND WRITING QUALITY:

A STUDY OF THE ARGUMENTATIVE TEXTS OF COLLEGE FRESHMEN

ABSTRACT. The argumentative essays of 48 freshman were used to form two groups of essays. One group consisted of essays which had received summed holistic scores of "8," and one group consisted of essays which had received summed holistic scores of "2." The two groups of essays were compared with respect to several text features--length, syntax, and topical structure. The topical structure variables, which were based on work growing out of Prague School linguistic theory, were shown to be highly useful in distinguishing between the two groups of texts. Particularly significant were the percentages of Type 3 and Type 5 sentences; percentages of t-units in parallel, extended parallel, and sequential progressions; average number of t-units per parallel, extended parallel, and sequential progressions; mean number of t-units per topic, and mean number of words per topic. The importance of these findings is discussed, and their implications for teaching and research are suggested.

INTRODUCTION

Writing research has long sought to identify internal features of written discourse that can help to explain qualitative differences among texts, particularly those written by students. The motivation for this search seems obvious: as teachers of writing, we will be better able to serve our students if we can describe those features of texts which most affect judgments of overall writing quality. Apart from studies that examine such features as handwriting and error, researchers have typically approached this problem in one of two ways.

The first approach has been largely quantitative in its orientation and has attempted to locate the source of qualitative differences in syntactic features. Following the lead of Hunt (1964, 1965, 1970) and--to a lesser extent--Christensen (1963), recent research (e.g., Nold & Freedman, 1977; Morenberg, Daiker & Kerek, 1978; Stewart, 1978; Faigley, 1979; and Witte & Faigley, 1981) has looked for correlations between writing quality and such syntactic features as t-unit and clause length, percentage of t-units with

nonrestrictive modifiers, and percentage of words in nonrestrictive modifiers. Although two 1978 sentence-combining studies (Morenberg, Daiker & Kerek, 1978; Stewart, 1978) suggest a positive and linear relationship between clause length and t-unit length and writing quality, other studies (Nold & Freedman, 1977; Faigley, 1979; Witte & Faigley, 1981) using multiple regression techniques report that t-unit and clause length predict very little of the variance in the quality scores assigned student essays. And two recent studies (Hake, Miller, Williams & Witte, in press; Witte & Daly, 1982) amass considerable evidence to suggest that longer t-units may be negatively associated with writing quality. The Christensen variables do not fare much better in the literature, as the regression analyses reported in Nold and Freedman (1977), Faigley (1979), and Witte and Faigley (1981) attest.

Often more theoretical and descriptive than quantitative in nature, the second approach has focused on text features that extend across the boundaries of sentences, features that lie beyond the reach of syntactic analyses. Perhaps the best known of this research is that produced during the 1960's on larger units of meaning such as pragraphs. During the 1960's, for example, Christensen (1965), Becker (1965), Karrfalt (1968), Rodgers (1966, 1967), and Pitkin (1969, 1977a, 1977b) turned to such concepts as functional slots, semantic levels of generality, discourse "blocs," and relationships across sentence boundaries to explain how groups of sentences combine to form units of meaning beyond the sentence. During the 1970's, Grady (1971), D'Angelo (1974), and Nold and Davis (1980) extended and refined some of these concepts. However, while this research has perhaps increased our understanding of extended units of discourse, it has not produced an analytic method that could be applied in studies of large numbers of texts, in part because developing replicable coding procedures has not been a major concern of the researchers.

More recently, researchers taking this second approach have begun to examine cross-sentence relationships in other ways. For example, drawing on

the work of Halliday and Hasan (1976) on text cohesion, Witte and Faigley (1981; Witte, 1980), Halloway (1981), and Welchen (1982) have conducted studies or presented theoretical rationales suggesting that the ways writers use cohesive ties can help distinguish between low- and high-quality texts. While cohesion analysis shows promise for research on writing quality, it may not adequately depict crucial semantic relationships within texts; and it is difficult to see how cohesion analyses can develop into a useful pedagogy.

A more promising line of research has evolved from the study of topic in discourse, particularly by such Prague School linguists as Mathesius (1929, 1928, 1939), Firbas (1964, 1966, 1974), Sgall (1967, 1974, 1979a, 1979b), Sgall and Hajičová (1977, 1978), and Daneš (1964, 1974). Although Mathesius' work on topic may derive in part from the earlier work of Weil (1844) and Marty (1897), one of Mathesius' contributions to the analysis of extended texts stems from his emphasis on sentences in the context of whole texts, rather than as autonomous units of discourse. Mathesius used the term theme to identify "what the sentence is about" and the term enunciation to refer to "what is said about the theme." The context in which individual sentences exist becomes important because the theme not only indicates "what the sentence is about," but also announces "what is known or at least obvious in a given situation and from which the speaker proceeds in his discourse." Thus, for Mathesius, the enunciation of an individual sentence adds new or unknown information to the discourse.

Building on Mathesius' work, Firbas proposed the concept of "communicative dynamism." Firbas argues that the theme of a sentence contributes least to the "communicative dynamism" of the text, primarily because it delivers the least amount of information not recoverable from elsewhere in the text. In place of Mathesius' term enunciation, Firbas uses the term rheme. According to Firbas, the rheme of a sentence contributes most to "communicative dynamism," delivers information new to the text, and usually

appears toward the end of the sentence.

Between the time of Mathesius and Firbas, the term topic emerged as a synonym for theme. The term topic was first used by Hockett (1959) to refer to what the Prague School linguists had called theme and has since become the more common term; and the term comment is now often used in place of the Prague School terms enunciation and rheme. Indeed, much of the recent work of such Prague School theorists as Sgall and Hajičová employs the terms topic and comment and treats extensively topic-comment relationships in texts.

Drawing on such concepts as theme-enunciation, theme-rheme, old-new information, given-new information and topic-comment, Daneš argues that Prague School theories can be used to identify basic text patterns. In one such pattern, successive sentences express the same theme or topic. In Daneš' second text pattern, the comment or rheme portion of the preceeding sentence becomes the topic or theme of the following sentence. In a third text pattern, topics of successive sentences are identified with reference to their relationship to a "hypertheme," in effect a discourse topic not stated explicitly in the text.

While the "topic" approach to discourse analysis is not free of terminological and theoretical problems (see, e.g., Enkvist, 1974; Grimes, 1978; Chafe, 1976; de Beaugrande, 1980), it has been used successfully in studies of comprehension (e.g., Haviland & Clark, 1974; Clark & Haviland, 1977; Kieras, 1978, 1980, 1981; Faigley & Witte, in press; vande Kopple, 1982), and used to study student writing (Witte, in press). In addition, its importance has been stressed in recent theoretical studies (e.g., van Dijk, 1977a, 1977b, 1980; Li & Thompson, 1976; Dillon, 1981; Prince, 1981; Halloway, 1982).

Using the theoretical and applied research on topic at the level of the sentence and in extended discourse, the present study explores two questions:

"Can a topic approach to sentence analysis distinguish between the sentences of high- and low-quality argumentative texts written by college freshmen?" and "Can topical structure analysis help distinguish between the structural patterns of such texts?"

METHODS AND PROCEDURES

Sample Selection. The texts examined in the present study were chosen from 180 essays written on a controlled assignment as part of an evaluation of the Freshman Writing Program at the University of Texas in 1978 (Witte & Faigley, 1981). The writing assignment asked students to argue either for or against required high school composition courses. During the Fall of 1978, the 180 papers were rated holistically according to procedures used by the Educational Testing Service (Godshalk, Swineford & Coffman, 1966; Cooper, 1977; Alloway, 1980). Each essay was rated by two raters on a 1-to-4 scale, with "4" being the highest score. Thus each essay could have a summed holistic score ranging from "2" to "8." In the present study, essays which received a summed score of "2" formed a low-score group (N=24) of texts; and essays which received a summed score of "8" formed a high-quality group (N=24) of texts. In November of 1981, a workstudy student retrieved the 48 essays from storage, photocopied them, and randomly sequenced them. I then examined the writing assignment carefully and read the 48 essays as a group, a procedure which gave me a rather clear sense of the principal main ideas or themes which could be expressed in response to the assignment.

Text Analyses. Without knowledge of the summed score assigned to any one essay, I then read the texts individually and analyzed them for a number of text features. First, I counted the number of words, clauses, and t-units. These three features allowed me to compute two syntactic variables commonly used in composition research, mean clause length and mean t-unit length; and the number of words allowed me to compare the two sets of essays with respect

to text length.

In addition to these features of either syntax or text length, I analyzed certain features of topical structure in the 48 texts to determine how the two groups of writers accommodated topics in individual sentences, how they developed their discourse topics, their main ideas, and how they mapped their discourse topics onto individual sentences and sequences of sentences.

The first step in this analysis entailed classifying each t-unit as one of the five types of sentences used in Lautamatti's (1978) research on discourse simplification. These sentence types differ one from another according to the relationship among the initial sentence element, the topical subject, and the grammatical subject. In Type 1 sentences, the initial sentence element (ISE), the topical subject (TS), and the grammatical subject (GS) are identical. In Type 2 sentences, the ISE differs from the TS, while the TS and the GS are identical. In Type 3 sentences, the ISE and the GS are identical, but both differ from the TS. In Type 4 sentences, the ISE and the TS are identical, but both differ from the GS. In Type 5 sentences, the ISE, the TS, and the GS are all different.

Distinguishing among the five types of sentences in real discourse obviously presupposes identifying the topical subject of each t-unit, a process altogether dependent on one's understanding of the text as a whole. Accordingly, before I marked the topical subjects of any text, I read the essay carefully and tried to create an abstract or gist for it--a procedure much easier to perform for high-score texts than for low-score ones. In effect a statement of an essay's main idea, the gist provided a global context for interpreting individual sentences and for determining the topical subject of each. Within this larger framework, the semantic relationship between a particular sentence and the preceeding sentence provided a local context for interpreting individual sentences and thereby also helped to determine the

topical subject of each.

Given a local context and a global context for each sentence, I asked the question, "What is this sentence about?" To determine the answer for each sentence, I first looked to the grammatical subject of the main clause. If that particular noun phrase provided a satisfactory answer to the question, I labeled the t-unit either a Type 1 or a Type 2 sentence, depending on whether the subject was preceded by an initial sentence element such as a participle phrase, a subordinate clause, or a single-word adverb. Adjectives and articles appearing before the grammatical subject of the main clause were not considered as initial sentence elements because they are elements of the subject. However, elements such as conjunctive adverbs and coordinating conjunctions appearing before the subject of the main clause were considered initial sentence elements because they are not grammatically a part of the subject. If the grammatical subject of the main clause did not provide a satisfactory answer to the question, I then looked for a suitable noun phrase either in an initial sentence element or in matter following the verb of the main clause. If a noun phrase in an initial sentence element other than the grammatical subject of the main clause satisfactorily answered the question, I labeled the t-unit a Type 4 sentence. If the suitable noun phrase appeared after the verb of the main clause, I labeled the t-unit either a Type 3 or a Type 5 sentence, depending on whether the initial sentence element was the same as the grammatical subject of the main clause. In the essays used in the present study, a Type 3 sentence typically begins with a "dummy" grammatical subject (either "it" or "there") and embeds its topical subject in a relative clause following the verb of the main clause. A Type 5 sentence also usually contains a "dummy" subject and embeds its topical subject in a relative clause following the verb of the main clause; however, the "dummy" subject in a Type 5 sentence follows an initial sentence element of some kind.

The two passages which follow illustrate the five types of sentences

and the results of the coding procedures used. The two example passages were selected at random from the two sets of essays. The first passage includes the initial 13 t-units of a high-quality essay, and the second passage includes the first 13 t-units of a low-quality essay. At the beginning of each t-unit, I have identified the sentence type it represents; and within each t-unit, I have indicated the topical subject with italics.

EXAMPLE HIGH-QUALITY ESSAY

(1-a)(Type 1) Certain *aspects* of composition courses are important and necessary parts of the curriculum in many high schools. (1-b) (Type 1) *They* develop writing skills which serve students well, both in other courses and in the world of work. (1-c) (Type 3) There are *critics*, however, who see these courses as a waste of time and effort. (1-d) (Type 1) *Some* criticize the standards and grading procedures used by composition teachers. (1-e) (Type 1) *Others* contend that these courses are not related to anything outside the classroom. (1-f) (Type 4) However, when all *aspects* of high school composition courses are examined, it becomes clear that these courses can be useful to anyone who enrolls in them.

(1-g) (Type 1) One important *aspect* is the teacher. (1-h) (Type 2) For example, high school composition *teachers* show students the value of being able to communicate one's thoughts in writing. (1-i) (Type 1) *Teachers* thus help students develop healthy attitudes toward language and toward writing. (1-j) (Type 2) In high school composition courses, *teachers* also help students appreciate good writing. (1-k) (Type 1) *Students* learn to imitate good writing as they read it. (1-l) (Type 5) Most importantly, it is essential that *teachers* show that they really care about the students' writing.

(1-m) (Type 1) Another important *aspect* of composition courses is what is taught. . . .

EXAMPLE LOW-QUALITY ESSAY

(2-a) (Type 1) A *composition* can be any number of written works: essay tests, creative works, and analytic works. (2-b) (Type 3) It is basic to have a good *understanding* of writing because many courses in high school and college concentrate on bringing forth one's ability to assimilate and write down material picked up in the course. (2-c) (Type 1) *Creative writing* is writing works of fiction or non-fiction but without the rigorous following of the rules needed in an analytic essay.

(2-d) (Type 1) The main *purpose* of any type of composition course is to teach one to express his/her thoughts in a more concise

and complete manner. (2-e) (Type 2) If one is writing a journal, the ability to write down thoughts in a clear way can help a person think in a clear way. (2-f) (Type 1) Analytical writing helps students understand what they are reading, whether it is a novel or a poem.

(2-g) (Type 1) The ability to write any type of composition is important for those who hope to attain a higher education. (2-h) (Type 1) A freshman entering college must know how to write in order to do well in most courses. (2-i) (Type 1) Government, History, English, and even Foreign language courses demand that a student absorb the facts and can [sic] put them into concise and clear order when the student is tested. (2-j) (Type 2) However, the student who does not plan to go to college only needs composition to improve reading skills. (2-k) (Type 1) Many jobs people have do not demand writing ability while everything demands reading ability. (2-l) (Type 2) Thus writing essays in high school teaches students what to analyze in a work of literature, bettering reading ability.

(2-m) (Type 1) The High Schools have problems teaching the right aspects of composition in both the Public and Private schools. . . .

After classifying the t-units in the 48 essays according to Lautamatti's taxonomy of sentence types, I analyzed the texts in terms of a number of features of topical structure. In contrast to the five sentence types, which yield information about the topical focus of individual sentences, this second set of variables indicates how topical material is carried across t-unit boundaries and how t-units are linked to form coherent texts. These topical structure variables are the following: the number of different topics; the number of nonrepeated topics; topical depth; the number of t-units in parallel progressions, extended parallel progressions, and sequential progressions; and the number of parallel, extended parallel, and sequential progressions. These variables are illustrated in Figure 1 and Figure 2, which represent the topical structure of the high-quality and low-quality examples, respectively.

T-unit No.	Topical Depth 1	2	3	Topic No.
(1-a)	aspects			1
(1-b)	They			1
(1-c)		critics		2
(1-d)		some		2
(1-e)		Others		2
(1-f)	aspects			1
(1-g)	aspect			1
(1-h)		teachers		3
(1-i)		Teachers		3
(1-j)		teachers		3
(1-k)			students	4
(1-l)		teachers		3
(1-m)	aspect			1

Figure 1. Topical Structure of Example High-Quality Essay.

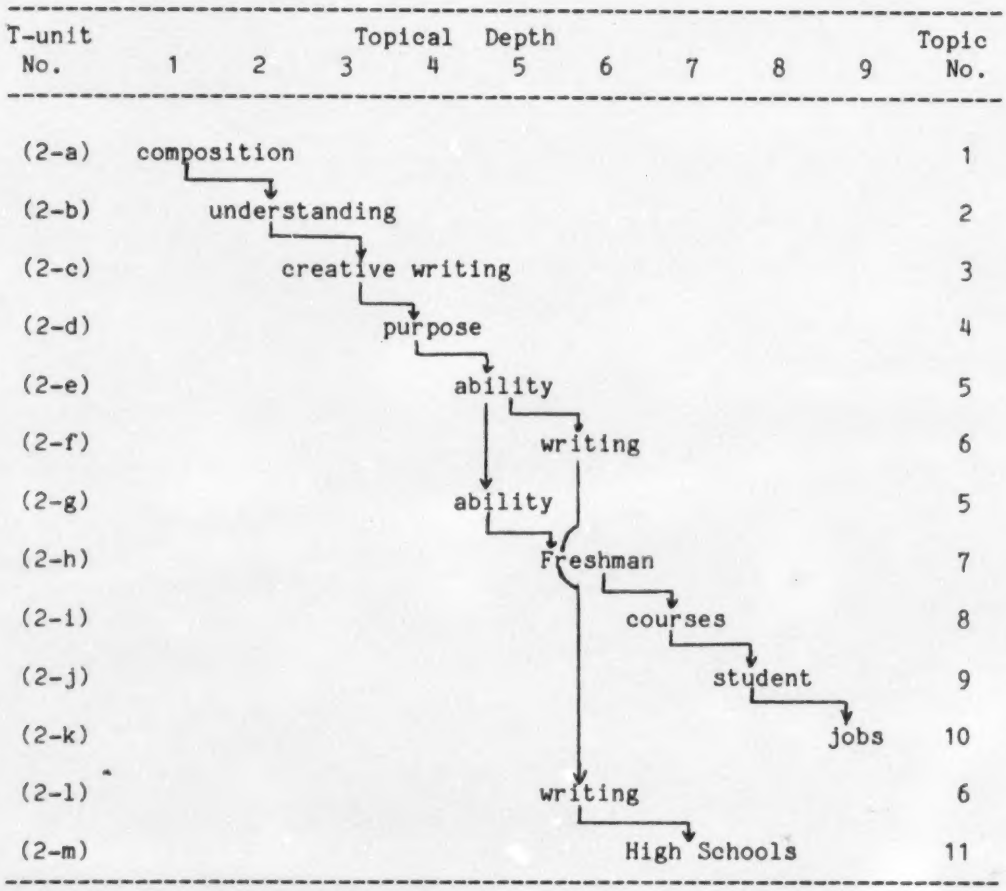

Figure 2. Topical Structure of Example Low-Quality Essay.

Figure 1 shows that the high-quality example contains four different topics, and Figure 2 shows that the low-quality example contains 11 different topics. Because the topical subjects of adjacent t-units (1-a) and (1-b) are the same, together they form a parallel progression--as do t-units (1-c) through (1-e), t-units (1-f) and (1-g), and t-units (1-h) through (1-j). No parallel progressions appear in the low-quality example. Together t-units (1-b) and (1-c) form a sequential progression, because the topical subject of each is different. Other sequential progressions in the high-quality example are the following: (1-g) and (1-h); ánd (1-j) and (1-k). In the low-score example, sequential progressions are formed by t-units (2-a) through (2-f), by (2-g) through (2-k), and by (2-l) and (2-m). Two extended parallel

progressions appear in the high-quality example, and two appear in the low-quality example. An extended parallel progression results when the same topical subject appears in at least two nonadjacent t-units. That is to say, the sequence of a given sentence topic is interrupted by at least one t-unit containing a different topical subject. In the low-score text, (2-e) and (2-g) form one extended parallel progression, while (2-f) and (2-l) form a second. In the high-score example, (1-a), (1-b), (1-f), (1-g), and (1-m) form one extended parallel progression, and (1-h), (1-i), (1-j), and (1-l) form a second. For further illustration, consider t-units (1-h), (1-i), (1-j), and (1-l). This progression of t-units is called extended because the progression of the same topical subject--"teachers"--through the text leaves off after (1-j) and then resumes with (1-l) following (1-k), which is an intervening t-unit with a different topical subject, in this case "students." The topical depth of a passage is determined by the number of different topics in the longest sequential progression or combination of sequential progressions. Thus while the high-score example contains four distinct topics, it has a topical depth of three; and while the low-score example contains 11 different topics, it has a topical depth of nine.

The last stage of analysis involved the creation of a number of computed topical structure variables, variables which result from the mathematical transformation of previously quantified raw data. These computed topical structure variables are the following: percentage of t-units falling into each of the five classes of sentences; percentage of topics which are not repeated; percentage of t-units in parallel, extended parallel, and sequential progressions; number of t-units per parallel, extended parallel, and sequential progression; number of t-units per topic; and number of words per topic.

RESULTS

Syntactic Variables. Group t-tests were performed to determine whether the means for t-unit and clause length differ significantly for the two sets of essays. The high-quality texts contain t-units (mean=17.0; sd=4.0) which average 0.9 of a word shorter than those of the low-score texts (mean=17.9; sd=4.1). The means for t-unit length do not differ significantly at the .05-level of confidence (T=0.79). The clauses in the high-score texts (mean=10.8; sd=2.4) are on average about 0.1 of a word shorter than those in the low-score texts (mean=10.9; sd=1.5). The means for clause length do not differ significantly (T=0.15).

Text Length. A group t-test was also used to determine whether the essays in the two sets differ significantly with respect to text length. The high-score texts average 530.8 words (sd=221.4), about 124 words more than the low-quality essays which average 406.5 words (sd=139.4). The means for the two sets of essays differ significantly (T=2.33; $p < .05$).

Types of T-Units. The mean percentage of t-units classified under Lautamatti's five sentence types were also compared. The means, standard deviations, t-values, and significance levels are presented in Table 1.

Sentence	Percentage of T-Units				T
	High-Score Texts		Low-Score Texts		
Types	Mean	SD	Mean	SD	Value
Type 1	52.9	15.8	45.2	17.0	1.64*
Type 2	19.3	11.3	12.9	12.0	1.93*
Type 3	8.7	12.7	17.4	13.0	2.33**
Type 4	9.1	4.5	6.4	5.9	1.75*
Type 5	10.0	7.6	18.2	11.5	2.93**

*Not Significant
**$p < .05$

Table 1. Mean, Standard Deviations, T-Values, and Levels of Significance for Percent of T-units Classified Under Each of Lautamatti's Five Sentence Types for the High-Quality Texts (N=24) and the Low-Quality Texts (N=24).

As Table 2 indicates, the mean percentages of total t-units represented by Type 1, Type 2, and Type 4 sentences do not differ significantly across the two sets of essays. However, the mean percentages for Type 3 and Type 5 sentences do differ significantly, with a significantly higher percentage of Type 3 and Type 5 t-units appearing in the low-score essays.

Topical Structure Variables. The two sets of essays were also compared in terms of several topical structure variables. Some of these variables are raw data variables, but most are computed variables. The information relevant to the t-tests used to compare the means for these variables appears in Table 2.

Topical Structure Variables	High-Score Texts Mean	SD	Low-Score Texts Mean	SD	T Value
Topics	10.9	4.1	13.3	5.9	1.65*
Repeated Topics	5.0	2.0	4.6	2.3	0.60*
Nonrepeated Topics	5.9	3.7	8.7	5.8	2.47**
% of Topics Not Repeated	50.6	20.0	61.4	19.5	1.90*
Topical Depth	4.2	1.3	5.9	2.3	2.99***
% of T-units in Parallel Progressions	50.4	11.7	37.5	23.5	2.41**
% of T-units in Extended Parallel Progressions	68.8	20.2	47.8	23.8	3.29***
% of T-units in Sequential Progressions	64.8	9.4	81.5	14.9	4.73****
T-units per Parallel Progression	2.8	0.5	2.3	0.9	2.59**
T-units per Extended Parallel Progression	5.6	1.6	3.5	1.7	4.55****
T-units per Sequential Progression	2.7	0.6	3.7	1.8	2.65**
T-units per Topic	3.04	0.9	1.88	0.64	5.12****
Words per Topic	53.2	22.5	33.7	12.4	3.74****

*Not Significant
**p < .05
***p < .01
****p < .001

Table 2. Means, Standard Deviations, T-Values, and Significance Levels for Group T-Test Used to Compare Topical Structure Variables Analyzed in the High-Score Texts (N=24) and Low-Score Texts (N=24).

Table 2 reveals that the means for two raw data variables (number of topics and number of repeated topics) and for one computed variable (percentage of topics that are not repeated) do not differ significantly, although the difference between the means for the computed variable approaches significance (p=.064). However, Table 2 also shows that the means for the remaining variables all differ significantly across the two sets of essays.

DISCUSSION OF THE RESULTS

The results of the analyses indicate in what ways the two sets of argumentative essays are different and in what ways they are similar. Whether or why either the differences or the similarities are meaningful or important are the major questions addressed in this section. In the present discussion, I focus primarily on the results reported in Table 1 and in Table 2. I use the results of the analyses of syntax and text length to supplement my discussion of Tables 1 and 2.

Use of the Five Types of Sentences. Table 1 indicates that the two sets of essays are similar with respect to the degree to which they rely on Type 1, Type 2, and Type 4 sentences, but that the two sets of essays differ significantly with respect to the use of Type 3 and Type 5 sentences.

As Table 1 indicates, writers of both sets of essays display a decided preference for Type 1 sentences. In fact, between about 45% and 53% of all t-units in the two sets are of this type. Typically, Type 1 sentences--t-units in which the initial sentence element, the grammatical subject, and the topical subject coincide--are syntactically the least complex of the five types. Type 1 sentences, for example, never begin with introductory clauses or phrases, including discourse connectives (such as "first," "obviously," "however," or "consequently"). Although the mean percentages for the two sets of essays do not differ significantly, writers of the high-score essays use Type 1 sentences somewhat more often than their low-score counterparts, a phenomenon which partly explains the difference in mean t-unit length. In addition, the relatively high percentage of Type 1 sentences in both sets of essays indicates a general tendency on the part of both good and poor writers to place topical subjects at the beginning of sentences as subjects of main clauses. Such "fronting" may result from writers' attempts--which need not be completely conscious ones--to identify for readers the topics of sentences as soon as possible, thus increasing the ease with which readers can process a text.

Although the mean percentages do not differ significantly, Table 1 also suggests a tendency on the part of the writers of the high-score texts to rely more heavily than their counterparts on Type 2 sentences. Like Type 1 sentences, Type 2 sentences contain topical and grammatical subjects which coincide. Unlike Type 1 sentences, Type 2 sentences contain an initial sentence element which is distinct from the grammatical and, in this case, the topical subject. In the majority of the Type 2 sentences appearing in the two essay sets, the initial sentence element consists of a discourse connective such as "For example" in (1-h) of the high-score example and "However" in (2-j) and "Thus" in (2-l) of the low-score example. Considerably fewer of the intial sentence elements in Type 2 sentences contain a topical adjunct, a phrase or clause which provides a context for the topical subject of the sentence as in (1-j) and (2-e). In (1-j) the phrase "In high school composition courses" is considered a topical adjunct because it reestablishes or reiterates the larger context in which the topical subject of the sentence--in this case "teachers"--is to be considered. Presumably, the introductory phrase in (2-e) is intended to function similarly; but the writer of the low-quality text uses an ambiguous adjunct to establish the larger context. When topical adjuncts do appear in the initial sentence element of Type 2 sentences, they usually appear in the high-quality texts.

The occurrence of Type 2 sentences may signal another important difference between the two sets of essays: whereas the Type 2 sentence is the second most frequently used sentence type in the high-score essays (19.3% of all t-units), it is the fourth most frequently used in the low-quality essays (12.9% of all t-units). This observation admits at least two possible interpretations. First, because after Type 1 sentences, Type 2 sentences may be syntactically the least complex of the five types, the heavier reliance on them in the high-quality essays helps account for the shorter t-units in those essays. Second, the greater frequency of Type 2 sentences in the high-score essays suggests that the writers of those texts are perhaps more conscious of

the need to help the reader through an essay by providing initial sentence elements having an adjunct function or purpose.

When the percentages for Type 1 and Type 2 sentences are summed, we find that the writers of the high-score texts use t-units with identical topical and grammatical subjects about 71% (sd=11.5) of the time, while the writers of the low-score texts use such t-units much less frequently, about 58% (sd=17.6) of the time. These mean percentages differ significantly (T=3.32, p=.002). Perhaps the writers of the high-quality texts operate on the assumption that using sentence types in which the topical and grammatical subjects coincide can facilitate the reader's comprehension of the text. Perhaps these same writers believe that using the sentence types which are usually less complex syntactically than the other three types can also facilitate comprehension.

The mean percentages for Type 4 sentences, like those for Type 1 and Type 2 sentences when those types are considered separately, do not differ significantly. Nevertheless, the uses of Type 4 sentences in the two sets of essays do differ in important ways. Type 4 sentences are those in which the topical subject and the initial sentence element coincide but differ from the grammatical subject. In an extended text, such sentences can be used in two ways: either to introduce a new topic or to establish cohesion across t-unit boundaries by fronting a topic previously given in the text and then adding new information as a comment in the main clause. This second use is illustrated by (1-f), the only Type 4 sentence in the two example essays. In that t-unit, a previously introduced topic--"aspects"--appears in an introductory subordinate clause. In the low-score essays, 49.4% of the Type 4 sentences introduce a new topic, while only 31.2% of the Type 4 sentences in the high-quality essays do so. To put the matter in another way, in the high-score essays, nearly 70% of the Type 4 sentences contain topical subjects previously introduced, often as a comment in the immediately preceding t-unit,

while only about half of the Type 4 sentences in the low-score essays do so. However, neither group relies extensively on Type 4 sentences: they are the least used sentence type in the low-quality essays and the next to the least used in the high-quality essays.

The mean percentages for both Type 3 and Type 5 sentences differ significantly across the two sets of essays, as Table 1 indicates. It is useful to discuss these two sentence types both collectively and separately, because they are similar in some respects and different in others. In Type 3 and Type 5 sentences, the topical subject appears after the grammatical subject of the t-unit. As Table 1 indicates, 35.6% (sd=16.3) of the t-units in the low-score essays are of these two types while only 18.7% (sd=13.8) of the high-quality t-units are. These collective mean percentages differ significantly ($T=3.87$, $p<.001$). In both sets of essays, the grammatical subject of a Type 3 or a Type 5 sentence is usually a "dummy" subject, either "it" or "there" (as in sentences (1-c), (1-l), and (2-b) of the example passages). One effect of "dummy" grammatical subjects is, of course, longer t-units. For example, more words are needed to say "It is basic to have a good understanding of writing" than are needed to say "A good understanding of writing is basic." In addition, the Type 3 and Type 5 sentences in the 48 texts are frequently passives, as in the following sentence from a low-quality paper: "After failing, it was recommended by my councellor [sic] that I take remedial English." Converting this sentence to the active voice saves words, as well as eliminates a grammatical error: "After I failed, my counsellor recommended remedial English." The heavier reliance on Type 3 and Type 5 sentences in the low-quality essays (35.6% compared with 18.7% in the high-score texts) probably accounts for some of the difference in mean t-unit and clause length between the two groups of essays. In addition, Table 1 indicates that while the writers of the low-score texts tend to use both Type 3 and Type 5 sentences with greater frequency than they use Type 2 sentences, just the opposite is true for the writers of the high-score essays. Perhaps

this finding indicates that the writers of the high-score essays tend to be more adept than their counterparts in creating cohesive ties across t-unit boundaries by fronting topical subjects in sentences where readers must depend on initial sentence elements to help bridge the semantic gaps between sentences.

Topical Development and Structure. While Table 1 directs attention to some important differences in the way the two groups of writers handle topical focus at the sentence level, Table 2 distinguishes between the ways the two groups of writers structure their essays around the topics they introduce. These differences are reflected in two related aspects of topical development: (1) the way in which a given topic is elaborated on, and (2) the way topical progressions are used to advance the discourse topic, the main idea or theme of the essay.

As I have noted, the high-quality essays contain significantly more words than the low-quality texts, about 531 words compared to about 407. Text length alone may suggest that the writers of the high-score texts are more capable than their low-core counterparts of developing their main ideas, that they have better invention skills. Clearly text length seems to be positively associated with writing quality, both in the essays examined in this study and in those examined in other studies (e.g., Nold & Freedman, 1977; Witte & Faigley, 1981). But text length, like t-unit and clause length, is at best only a gross indicator of qualitative differences among texts. Text length cannot tell either the teacher or the researcher what features of texts contribute to apparent qualitative differences associated with it. Neither can text length tell in what ways the invention skills of good writers differ from those of poor ones. And text length cannot tell anything about differences in the ways the two groups of writers arrange or structure the semantic content they decide to include in their texts. To explore such questions, I used the variables reported in Table 2 to analyze the two sets of

essays.

We learn from Table 2 that the high-quality texts introduce on average about 2.4 fewer distinct topics at the sentence level, 10.9 compared to 13.3, than do the low-quality essays. These means do not themselves differ significantly, and neither do the means for the number of repeated topics. However, the means for the number of nonrepeated topics and for the percentages of nonrepeated topics do differ significantly. Two other variables--mean number of t-units per topic and mean number of words per topic--indicate that the combined effect of the greater length and the fewer topics of the high-quality essays is significantly more elaboration of a given topic in a high-quality text than in a low-quality text. Whether seen in terms of the average number of words or t-units per topic, the differences in the extent to which the two groups of writers develop, or "stick to," a given topic is significant beyond the .001-level. Once a topic is introduced in a high-quality essay, it will receive significantly more of the writer's attention than a topic introduced in a low-quality essay. These findings suggest three things about the two groups of essays. First, they suggest that the writers of the high-score texts are more capable of "inventing" or "discovering" content for the topics they introduce. Second, they indicate that the high-score writers prefer to elaborate more on fewer topics. Third, and perhaps most importantly, these findings suggest that the high-score writers can better distinguish than their counterparts between sentence topics which are crucial to the "main idea" of a text and those which are not, a matter rather well illustrated by the low-quality example.

The suggestions that the writers of the high-quality essays are more capable of inventing or discovering content for the topics they introduce and that they can distinguish between crucial and non-crucial topics find support in the ways the two groups of writers develop the topics they introduce. The percentages of total t-units in the three different types of topical

progressions indicate that while both groups of writers rely heavily on sequential progressions, the writers of the low-quality essays do so significantly more often than the writers of the high-quality essays. Whereas about 82% of the t-units in the low-score texts appear in sequential progressions, only about 65% in the high-score texts do. As Table 2 indicates, these means differ significantly. The difference in the percentages of t-units in sequential progressions indicates that the high-quality essays tend to introduce new sentence topics significantly less often than do the low-quality essays. Usually the result is that the most important sentence topics appear at higher levels of topical depth, an observation supported by the example essays.

The mean percentages for the two groups of texts for parallel and extended parallel progressions also differ significantly. In the low-quality essays, 37.5% of the t-units are in parallel progressions, while in the high-quality essays 50.4% are. As Table 2 shows, these mean percentages differ significantly. In the low-quality essays, 47.8% of the t-units are in extended parallel progressions, but in the high-score texts, 68.8% are. As the two example passages illustrate, both parallel and extended parallel progressions consist of t-units having the same topical subject. In addition--and this matter is reflected in Figure 1 and Figure 2--the parallel and extended parallel progressions in the low-quality essays frequently differ from those in the high-score texts. In the high-score texts, parallel and extended parallel progressions typically appear at a higher level of topical depth than in the low-score essays, usually at a topical depth of "1" or "2," as in the case of the high-quality example. In the low-quality essays, something quite different happens. In those essays, parallel and extended parallel progressions usually occur at lower levels of topical depth, as is the case with the extended parallel progressions formed by (2-e) and (2-g) and by (2-f) and (2-1).

This difference in the use of parallel and extended parallel progressions suggests that when the writers of the low-score texts choose to elaborate on a given topic that topic is often at a lower level of topical depth than the topics elaborated on extensively by the high-score writers. My reading of the essays suggests that in the low-score essays, such elaborations of topics at lower levels of topical depth either front topical material which is not essential to the development of main idea or that these elaborations bury the most important topics introduced into the discourse. In short, the writers of the high-score texts tend more often than their low-score counterparts to use parallel and extended parallel progressions to highlight important topical material at higher levels of topical depth. In addition, the writers of the high-score texts more frequently return to their important sentence topics after intervening sequential progressions. The greater frequency with which the high-score writers return to their most important sentence topics affects their texts in two ways: the frequent return to the same topic allows them to front consistently the most important sentence topics, and it allows them to elaborate more on those topics. These effects, in turn, help the writers to maintain a consistent and clear focus in the high-quality essays.

Such differences between the two sets of essays are also reflected in the mean number of t-units in each type of topical progression. The mean number of t-units appearing in the three types of progressions perhaps best reflects how the two sets of essays differ. These means tell quite specifically how the writers of the high-quality essays manage to devote more words and more t-units to each of their topics. As Table 2 shows, the means for each of these three variables differ significantly. In the low-score texts, 2.3 t-units appear on the average in parallel progressions, but in the high-score texts 2.8 t-units do. In the low-score texts, 3.5 t-units appear on the average in each extended parallel progression, whereas 5.6 t-units appear in each extended parallel progression in the high-score essays. In the

low-score essays, 3.7 t-units appear on the average in each sequential progression, whereas only 2.7 t-units appear on the average in each sequential progression in the high-score essays. These findings support what we have already observed, namely, that the writers of the high-score texts elaborate much more on a given topic and introduce fewer of them. These findings also support the observation that the writers of the low-score texts tend to elaborate less on a given topic than the writers of the high-score texts. A good deal of the difference between the ways the two groups of writers elaborate on and structure the topics introduced in their respective texts is suggested by the differences among the average numbers of t-units per each type of topical progression. The highest average number of t-units per type of progression in the low-score texts is 3.7, and that for sequential progressions. On the other hand, the highest average for the high-score essays is 5.6, that for extended parallel progressions. Extended parallel progressions return repeatedly to previously introduced topics, adding new information about a particular topic as the discourse unfolds. In contrast, sequential progressions are formed by introducing new topics to the discourse; and in the low-score texts, these new topics are not always crucial--or sometimes even relevant--to the essay. The topics introduced in sequential progressions contained in the low-score essays frequently suggest either that the writers do not know how to establish connections among topics or that their principal discovery or invention strategy is "free association" or "nondirected and nonselective brainstorming." As a result of their heavier reliance on sequential progressions, the writers of the low-score essays generally produce texts which are less coherent than those of their high-score counterparts. This heavier reliance on sequential progressions, coupled with a tendency to use fewer parallel and extended parallel progressions, suggests that the low-score writers do not know how to use invention strategies to develop a topic or to fit it into a semantic structure appropriate for a particular "main idea." The low-quality essays generally lack what Hobbes and others (Hobbes & Evans, 1979; Agar & Hobbes, 1982) have called "local

coherence" and what they have called "global coherence."

The problems that the writers of the low-score essays have in creating coherence in their texts is also reflected in the mean "topical depth" of their essays. As Table 2 indicates, the low-score essays have a mean topical depth of 5.9, compared with a mean topical depth of 4.2 in the high-score essays. These means differ significantly. The difference between these means reflects the greater reliance of the writers of the low-score essays on sequential progressions, as well as a greater number of topics introduced. More importantly, the difference indicates that the writers of the low-score texts tend to introduce successively a larger number of topics than do the writers of the high-score essays. In this connection, recall that sequential progressions in the low-score texts average 3.7 t-units. Since sequential progressions by definition contain only t-units with different topics, each sequential progression in a low-score text contains an average of 3.7 different topics, compared with 2.7 in the high-score texts. Since the mean topical depth of the low-score essays is 5.9, this means that the writers of the low-score texts tend to link sequential progressions in some way. This linking of sequential progressions can be accomplished in one of two ways: either by creating an intervening parallel progression or by creating or adding to an extended parallel progression by reiterating a previously introduced topic. Both of the extended parallel progressions in the low-score example illustrate the latter option. In the low-score essays, the linking of sequential progressions through the creation of intervening parallel or extended parallel progressions tends to increase the mean topical depth of the essays. In the low-score texts, greater topical depth, longer sequential progressions, and more topics may have the effect of distracting readers by presenting them with topics which are not immmediately germane to the essay's main idea.

The topical structure variables used in the present study help to

pinpoint rather precisely some important qualitative differences between the two sets of essays. Most importantly, these variables evidence the kinds of decisions the writers of the two groups of essays made during composing. For example, writers of the high-quality essays tend to select sentence topics for their essays in somewhat different ways, a selection process which affects both the number of topics and the number of times a given topic appears in the essay. Both the number of topics and the times each is repeated seems to bear directly on how coherent a given essay is. In the present study, the essays which exhibit writers' preference for sequential progressions--which introduce new topics successively--and fewer parallel progressions of either type--which rely on repeated topics--tend to suffer most from a lack of coherence, tend not to be able to maintain a consistent focus from beginning to end.

IMPLICATIONS OF THE PRESENT STUDY

The present study was designed, in part, as an exploratory one to determine whether aspects of Prague School theories of topic and text structure might provide a useful framework for examining the written texts of student writers. In the present study, I employed this theoretical framework in an analysis of topical subjects, examining the influence of topical subjects on both sentence structure and discourse structure. At the sentence level, Lautamatti's five types of sentences were able to pinpoint some important differences between the high-quality and low-quality texts of beginning college freshman. It might be said that the analyses of topics at the sentence level yield quantifiable data about the "style" of the two sets of texts. What the present study tells about how the two groups of writers structured their sentences to accommodate their topical subjects suggests that the use of Lautamatti's taxonomy of sentence types might yield valuable new insights into not only certain stylistic features of high- and low-quality student texts of different kinds, but also professional texts of different

kinds. When such research is completed, it may be possible to supplement our best intuitions about style with some understandable, if still not totally accurate, descriptions of effective or functional styles for different kinds of writing. In the present study, the variables which looked beyond the sentence to development and structure in extended texts were able to distinguish among the two sets of essays in other important ways. For example, the use of those variables suggested not only that the invention strategies of the low-score writers were perhaps inappropriate to the task at hand, but also that these strategies seemed to affect in important ways the patterns of arrangement employed by the low-score writers. Perhaps with the aid of topical structure analysis, teachers will be better able to show students where and why the coherence of their texts is threatened. Topical structure analysis also seems potentially useful for identifying structural patterns which could distinguish among texts of different types written by writers of different abilities. The results reported and discussed in the preceding sections strongly suggest that the theoretical framework and the analytic method used in the present study might be fruitfully applied in subsequent research and provide a basis for certain pedagogical practices.

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